

**WHAT IS CLAIMED IS:**

1. A method of controlling volume of a received signal comprising:  
  
    computing an automatic gain control (AGC) gain;  
  
    computing a weighted dynamic range compression (DRC) gain; and  
  
    determining a total automatic volume control (AVC) gain from by combining an additional gain with the AGC gain and the weighted DRC gain.
2. The method of Claim 1, where the computation of the AGC and DRC gains are performed on a block of speech samples and updated from one block to the next.
3. The method of Claim 1, further comprising applying the AVC gain to adjust the volume of the received signal.
4. The method of Claim 1, further comprising transmitting speech in the received signal.
5. The method of Claim 1, further comprising weighting the DRC gain by the greater of the transmission noise level and the DRC gain factor.
6. The method of Claim 1, further comprising weighting the additional gain by the transmission noise level.
7. The method of Claim 1, wherein the additional gain is a constant gain.

8. The method of Claim 1, further comprising smoothing the total AVC gain.

9. The method of Claim 8, further comprising smoothing over several frames.

10. The method of Claim 1, further comprising computing the DRC gain using noise dependent and receive signal independent parameters according to the formula:

$$\text{drc\_gain} = \text{MAX\_DRC\_GAIN} * \max(\text{drc\_gain\_factor}, \text{noise factor});$$

wherein MAX\_DRC\_GAIN is an upper limit on the DRC gain.

11. The method of Claim 1, further comprising computing the AGC gain using:

$$\text{agc\_gain} = (\text{LEVEL1} - \text{envelope});$$

wherein LEVEL1 is the target level for a receive signal envelope level;

wherein the computation is limited such that 
$$\text{agc\_gain} = \min(\text{MAX\_AGC\_GAIN}, \text{agc\_gain});$$

wherein MAX\_AGC\_GAIN is the upper limit on the AGC gain and 
$$\text{agc\_gain} = \min(\text{MAX\_RMS} - \text{long\_term\_rms}, \text{agc\_gain}),$$
 or that the AGC gain is the lesser of the calculated AGC gain and the maximum RMS minus the long term RMS.

12. The device comprising:

a receiver which receives a transmitted signal;

a processor which determines the AGC gain, the DRC gain, a weighted constant gain, wherein the processor combines the AGC gain, the DRC gain, and the weighted constant gain to obtain an AVC gain, and

a volume control which adjusts a volume of the received signal based on the AVC gain.

13. The device of Claim 12, further comprising applying the AVC gain to adjust the volume of the received signal.

14. The device of Claim 12, wherein the received signal includes speech.

15. The device of Claim 12, wherein the processor weights the DRC gain by the greater of the transmission noise level and the DRC gain factor.

16. The device of Claim 12, wherein the processor weights the additional gain by the transmission noise level.

17. The device of Claim 12, wherein the additional gain is a constant gain.

18. The device of Claim 12, wherein the processor smoothes the AVC gain.

19. A method comprising:

computing an AVC gain based on the AGC gain, the DRC gain, and a constant gain; and

adjusting a volume based on the AVC gain.

20. The method of Claim 19, further comprising weighting the DRC gain by the greater of the transmission noise level and the DRC gain factor and weighing the constant gain by the transmission noise level.

21. The method of Claim 20, further comprising combining the AGC gain with the weighted DRC gain and the weighted constant gain to obtain the AVC gain.

22. The method of Claim 19, further comprising smoothing the computed AVC gain.

23. The method of Claim 19, further comprising decoding speech in a received signal.